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<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/748,240	AOYAMA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Hung Henry V. Nguyen	2851	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Interview conducted 7/28/05.
2. ☒ The allowed claim(s) is/are 1,4,7 and 10-18.
3. ☒ The drawings filed on 31 December 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                               |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>72905</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                                       |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                      |
|   | 9. <input type="checkbox"/> Other _____.  |

**HENRY HUNG NGUYEN  
PRIMARY EXAMINER**

### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with July 28, 2005 on July 28, 2005.

The application has been amended as follows:

### **IN THE CLAIMS**

Please cancel claims 19-22 and replace claims 1, 4, 7 and 10, as follows:

Claim 1 (Currently Amended): A self-cleaning method for a semiconductor exposure apparatus comprising a light source for emitting ultraviolet light for exposure, an optical system for guiding ultraviolet light emitted from the light source to an exposure mask on which an exposure pattern is formed, and a projection lens for projecting the exposure pattern to a subject to be processed, the method comprising :

arranging, at a position where the exposure mask is to be disposed, a transmittable plate for diffusing ultraviolet light guided by the optical system and irradiating the projection lens with it, where the transmittable plate is made of a quartz glass plate having a lens-shaped concave portion on one surface thereof and bracelet-shaped concave lenses concentrically arranged on the other surface thereof; and

irradiating an entire surface of the projection lens with the ultraviolet light emitted from the light source and diffused by the transmittable plate to optically clean a surface of the projection lens, and

wherein the self-cleaning transmittable plate includes a Fresnel lens made of a heat resistant transparent resin.

Claim 4 (Currently Amended): A self-cleaning method for a semiconductor exposure apparatus comprising a light source for emitting ultraviolet light for exposure, an optical system for guiding ultraviolet light emitted from the light source to an exposure mask on which an exposure pattern is formed, and a projection lens for projecting the exposure pattern to a subject to be processed, the method comprising :

arranging, at a position where the exposure mask is to be disposed, a transmittable plate for converging ultraviolet light guided by the optical system and irradiating the projection lens with it, wherein the transmittable plate is made of a quartz glass plate having a lens-shaped convex portion on one surface thereof and bracelet-shaped convex lenses concentrically arranged on the other surface thereof; and

irradiating an middle of the projection lens with the ultraviolet light emitted from the light source and converged by the transmittable plate to optically clean an inside of the projection lens, and

wherein the self-cleaning transmittable plate includes a Fresnel lens made of a heat-resistant transparent resin.

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Claim 7 (Currently Amended): A semiconductor exposure apparatus with a self-cleaning function comprising:

a light source for emitting ultraviolet light for exposure;

an exposure mask on which an exposure pattern is formed;

an optical system for guiding the ultraviolet light emitted from the light source to the exposure mask;

a projection lens for projecting the exposure pattern to a subject to be processed; and

a self-cleaning transmittable plate being arranged at a position where the exposure mask is to be disposed to clean the projection lens with the ultraviolet light,

wherein the self-cleaning transmittable plate diffuses or converts ultraviolet light guided by the optical system to irradiate the projection lens with the ultraviolet light, and wherein the self-cleaning transmittable plate is made of a quartz glass plate having a lens-shaped concave portion on one surface thereof and bracelet-shaped concave lenses concentrically arranged on the other surface thereof, and

wherein the self-cleaning transmittable plate includes a Fresnel lens made of a heat-resistant transparent resin.

Claim 10 (Currently Amended): A semiconductor exposure apparatus with a self-cleaning function comprising:

a light source for emitting ultraviolet light for exposure;

an exposure mask on which an exposure pattern is formed;

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an optical system for guiding the ultraviolet light emitted from the light source to the exposure mask;

a projection lens for projecting the exposure pattern to a subject to be processed; and

a self-cleaning transmittable plate being arranged at a position where the exposure mask is to be disposed to clean the projection lens with the ultraviolet light,

wherein the self-cleaning transmittable plate diffuses or converts ultraviolet light guided by the optical system to irradiate the projection lens with the ultraviolet light, and

wherein the self-cleaning transmittable plate is made of a quartz glass plate having a lens-shaped concave portion on one surface thereof and bracelet-shaped concave lenses concentrically arranged on the other surface thereof, and

wherein the self-cleaning transmittable plate includes a Fresnel lens made of a heat-resistant transparent resin.

### ***Reasons for Allowance***

2. The following is an examiner's statement of reasons for allowance: Claims 1, 4, 7, 10-18 have been found to be allowable since while the prior art teaches an exposure apparatus and photo cleaning method having a photo cleaning optical member removably arranged at object plane for cleaning a projection lens but the prior art either alone or in combination, neither discloses nor makes obvious the combination of an exposure apparatus and corresponding method comprising among other features, a self cleaning transmittable plate having a Fresnel lens on one side and a particular structure on the other side, as recited in the instant claims of

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present invention, for optically cleaning a projection lens. Applicant's arguments filed July 6, 2005 are deemed persuasive and incorporated herein by references.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V. Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

hvn  
7/29/05



**HENRY HUNG NGUYEN**  
**PRIMARY EXAMINER**